

IN THE CLAIMS

1. (currently amended) In a trailer having an un-powered axle assembly supporting rear wheels thereof, the axle assembly including brake assemblies for the wheels, the improvement comprising a cooling system for brakes in the un-powered axle assembly, the cooling system including:

a) an air-oil cooler assembly;

b) at least one hydraulic pump, an output of the pump in communication with an inlet of the air-oil cooler assembly, at least a portion of the oil exiting an outlet of the air-oil cooler assembly adapted to cool the brakes of the un-powered axle assembly;

c) a hydraulic fan assembly adapted to circulate air past the air-oil cooler assembly, a fan of the fan assembly being driven by oil exiting the outlet of the air-oil cooler assembly;

d) a reservoir for receiving oil from the hydraulic fan and the brakes and for further recirculation to an inlet of the at least one hydraulic pump; [[and]]

e) a transmission linked to the un-powered axle assembly, mounted between the brake assemblies and being equipped with a plurality of gears; and

[[e))] f) a pump drive linked to [[a]] the transmission [[of the un-powered axle assembly]], output of the transmission driving the at least one hydraulic pump.

2. (original) The system of claim 1, wherein the hydraulic fan assembly includes a control valve downstream of the air-oil assembly to receive a portion of the oil exiting

an outlet of the air-oil cooler assembly, the valve adapted to control the flow of oil to the hydraulic fan assembly for fan operation.

3. (original) The system of claim 1, wherein the pump drive is linked to the transmission via an electric clutch, the electric clutch controlling driving of the pump drive by the transmission based on the direction of rotation of a shaft of the axle assembly.

4. (original) The system of claim 3, wherein the electric clutch receives a signal from back-up lights of a trailer to disengage the transmission from the pump drive.

5. (original) The system of claim 1, wherein the transmission operation is directly controlled electronically for driving the pump.

6. (original) The system of claim 1, further comprising a temperature regulated bypass valve in communication with an outlet of the air-oil cooler assembly, the bypass valve controlling flow of oil to the hydraulic fan assembly based on a sensed temperature of the oil.

7. (previously presented) The system of claim 1, further comprising a divider downstream of the air-oil cooler assembly, the divider directing oil to the brakes of the un-powered axle assembly and the hydraulic fan assembly.

8. (original) The system of claim 1, further comprising a manifold collector adapted to receive oil from the brakes, hydraulic fan assembly for return to the reservoir.

9. (previously presented) The system of claim 1, wherein a pair of hydraulic piston pumps are used, and the output of the pumps is split to a pair of brake cooling inlets on the un-powered axle assembly.

10. (currently amended) A method of cooling brakes in an axle assembly comprising:

a) providing a trailer having an un-powered axle assembly with at least one hydraulic pump mounted externally of [[cooling]] brake assemblies contained in the un-powered axle assembly, and driving the at least one hydraulic pump using a rotation of a geared transmission mounted to [[the shaft of]] the un-powered axle assembly and between the brake assemblies;

b) directing oil exiting the at least one hydraulic pump to an air-oil cooler assembly to reduce the temperature of the oil;

c) directing at least a portion of the oil exiting the air-oil cooler assembly to brakes of the un-powered axle assembly; and directing another portion of the oil exiting the air cooler assembly to a hydraulic fan assembly to drive a hydraulic fan thereof and circulate air across the air-oil cooler assembly; and

d) accumulating the oil exiting the brakes and hydraulic fan assembly in a reservoir for recirculation to the at least one hydraulic pump.

11. (previously presented) The method of claim 10, wherein the pump is driven by a transmission linked to the un-powered axle assembly.

12. (original) The method of claim 11, wherein the transmission is deactivated when the shaft is to rotate in a direction opposite of the direction of rotation that drives the pump.

13. (original) The method of claim 10, further comprising sensing a temperature of the oil being pumped, and directing the another portion of the oil exiting the air cooler assembly to the hydraulic fan assembly to drive the hydraulic fan thereof to circulate air across the air-oil cooler assembly when the temperature reaches a certain target temperature.

14. (original) The method of claim 11, wherein the pump is directly linked to the transmission, or is linked by an electrical or mechanical clutch.

15. (canceled)

16. (previously presented) The trailer of claim 1, wherein the trailer is a lowboy trailer having a front end hitch capable of connecting to a removable gooseneck hitch of a towing vehicle.

17. (previously presented) A braking cooling assembly comprising an un-powered axle assembly, a transmission for the un-powered axle assembly, and a cooling system, the cooling system further comprising:

a) an air-oil cooler assembly;

b) at least one hydraulic pump, an output of the pump in communication with an inlet of the air-oil cooler assembly, at least a portion of the oil exiting an outlet of the air-oil cooler assembly adapted to cool the brakes of the un-powered axle assembly;

c) a hydraulic fan assembly adapted to circulate air past the air-oil cooler assembly, a fan of the fan assembly being driven by oil exiting the outlet of the air-oil cooler assembly;

d) a reservoir for receiving oil from the hydraulic fan and the brakes and for further recirculation to an inlet of the at least one hydraulic pump; [[and]]

e) a transmission linked to the un-powered axle assembly, mounted between the brake assemblies and being equipped with a plurality of gears; and

[[e))] f) a pump drive linked to a transmission of the un-powered axle assembly, output of the transmission driving the at least one hydraulic pump.

18. (previously presented) The assembly of claim 1, wherein at least one un-powered axle assembly/transmission is mounted on a rear end of the trailer.

19. (currently amended) In a trailer having an un-powered axle assembly, the un-powered axle assembly having brakes that require cooling, the improvement comprising at least one hydraulic pump that supplies cooling oil to the brakes mounted externally to the brakes and means for driving of the hydraulic pump using rotation of a transmission mounted to [[component of]] the un-powered axle assembly and between the brakes thereof, means for disengaging the transmission from the un-powered axle assembly, and a heat exchanger assembly adapted to receive heated oil from the brakes for cooling and recirculation back to the brakes.

20. (previously presented) The trailer of claim 1, wherein the hydraulic pump is mounted externally of the brake assemblies of the un-powered axle assembly.

21. (previously presented) The assembly of claim 17, wherein the hydraulic pump is mounted externally of brake assemblies of the un-powered axle assembly.